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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
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Alexander Gerasimow Allen Bradley Company Patent Dept. 704P Floor 8 T29 1201 South Second Street Milwaukee, WI 53204			EXAMINER NGUYEN, HOA CAO	
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Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary

Application No.

10/663,172

Applicant(s)

BEIHOFF ET AL.

Examiner

HOA C. NGUYEN

Art Unit

2841

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --
Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 1/10/08.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 48-51, 56, 58-61, 66, 68-71, 76, 78 and 79 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 48-50, 56, 58-60, 66, 68-70, 76, 78 and 79 is/are rejected.
- 7) ☒ Claim(s) 51, 61 and 71 is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftperson's Patent Drawing Review (PTO-948)
- 3) ☐ Information Disclosure Statement(s) (PTO/SB/08)
Paper No(s)/Mail Date _____
- 4) ☐ Interview Summary (PTO-413)
Paper No(s)/Mail Date _____
- 5) ☐ Notice of Informal Patent Application
- 6) ☐ Other: _____

DETAILED ACTION

1. The amendment filed on 1/10/08 has been entered. Claim 1-47, 52-55, 57, 62-65, 67, 72-75, and 77 are cancelled.

Claims 48-51, 56, 58-61, 66, 68-71, 76, and 78-79 are considered in this Office action.

Claim Rejections - 35 USC § 102

2. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

3. Claims 48 and 56 are rejected under 35 U.S.C. 102(b) as being anticipated by Baumel et al. (US 5966291, hereafter Baumel).

Regarding claim 48, as shown in figures 1 and 2, Baumel discloses a modular power converter comprising:

(a) a converter (see col.2:59-62, as clearly shown in figure 1) including a support 21 (heat sink, col.3:10-12) including a passage 211 (provided by ribs 211, col.3:15-16) for circulation of a cooling medium 23 (col.3:21-22) and a power electronic switching circuit 1 (power unit, col.2:64) mounted on the support 21 and inherently configured to convert input power to output power having desired electrical characteristics;

(b) a housing 61 (col.3:66-col.4:1) at least partially surrounding the converter;
and

(c) at least one plug-in connector 52/53/54 (col.3:64, considering the connecting bars 52/53/54 for plug in external cables/wires) coupled to the switching circuit and to the housing for establishing electrical continuity between the converter and external circuitry.

Examiner remarks:

Applicant should be noted that the limitation "configured to convert input power to output power having desired electrical characteristics" is interpreted to only require the ability to so perform. In the case of product claim, only the structure of the claim distinguishes over the prior art.

Applicant also noted that connecting bars 52/53/54 are inherently used to plug in a cable for connecting to external circuit (see figure 2).

Regarding claim 56, Baumel further discloses a fluid connector 221/222 (col.3:19; considering the inlet/outlet opening as fluid connector) for routing the cooling medium to and from the converter.

Claim Rejections - 35 USC § 103

4. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

5. Claims 49-50, 58-60 and 66 are rejected under 35 U.S.C. 103(a) as being unpatentable over Baumel.

Regarding claim 49, Baumel disclose every limitation as shown in claim 48 above including the at least one plug-in connector 52/53/54 extends shielding from the housing 61 to a region at least partially surrounding conductors of the at least one connector. But, Baumel does not disclose the housing shields the switching circuit from EMI, and wherein the at least one connector extends EMI shielding from the housing to a region at least partially surrounding conductors of the at least one connector.

It is old and well known in the art that metal housing can provide EMI protection and a housing made of metal is also well known in the art.

The Examiner takes Official Notice that metal housing is well known in the art.

Therefore, it would have been obvious to one having ordinary skill in the art at the time the invention was made to make the housing 61 of Baumel to be made of metal in order to provide chassis grounding/common grounding for power unit 1 and the control unit 3 enclosed within the housing. Thus, resulting the housing 61 shields the switching circuit from EMI, and the at least one connector extends EMI shielding from the housing to a region at least partially surrounding conductors of the at least one connector.

Regarding claim 50, Baumel discloses every limitation as shown in claim 48 above, but fails to disclose the at least one plug-in connector includes a single connector having electrical connections for the input power and the output power.

A plug-in connector contains multiple of pins/leads for both input and output is old and well known in the art. It is merely a matter of choice to separate them in different connectors or combining all in a single connector.

The Examiner takes Official Notice that a plug-in connector that includes a single connector having electrical connections for the input power and the output power is old and well known.

Therefore, it would have been obvious to one having ordinary skill in the art at the time the invention was made to make the plug-in connector of Baumel as a single connector having electrical connections for the input power and the output power, Since this feature is well known in the art.

Regarding claim 58, Baumel discloses every limitation as shown in claims 48 and 49 above including:

(a) a converter (power unit 1 and control unit 3) including a support 21 including a passage 211 for circulation of a cooling medium 23 and a power electronic switching circuit 1 mounted on the support and configured to convert input power to output power having desired electrical characteristics;

(b) a housing 61 at least partially surrounding the converter; and

(c) at least one plug-in connector 52/53/54 coupled to the switching circuit and to the housing for establishing electrical continuity between the converter and external circuitry (inherent).

However, Baumel fails to disclose the housing configured to provide integral EMI shielding and at least partially defining an electrical reference plane for the converter, and the at least one plug-in connector coupled to the switching circuit and to the housing for extending EMI shielding from the housing to a region at least partially surrounding conductors of the at least one connector.

As discussed in claim 49 above about the metal housing that can also provides EMI protection and common grounding, it would have been obvious to one having ordinary skill in the art at the time the invention was made to make the housing 61 of Baumel to be made of metal material in order to provide chassis grounding/common grounding for power unit 1 and the control unit 3 enclosed within the housing. Thus, resulting the housing that provide integral EMI shielding and at least partially defining an electrical reference plane (chassis grounding) for the converter, and the at least one plug-in connector coupled to the switching circuit and to the housing for extending EMI shielding from the housing to a region at least partially surrounding conductors of the at least one connector (the conductors are partially enclosed within the metal housing).

Examiner Remarks: The limitation that the housing configured to provide integral EMI shielding for the converter and the at least one plug-in connector coupled to the switching circuit for establishing electrical continuity between the converter and external circuitry (trivial) and for extending EMI shielding from the housing to a region at least partially surrounding conductors of the at least one connector are interpreted to only require the ability to so perform. In the case of product claim, only the structure of the claim distinguishes over the prior art.

Regarding claim 59, the limitation that the housing and the at least one plug-in connector are configured to provide contiguous shielding having intrinsically low impedance paths for EMI originating from the switching circuit and from sources external to the converter during operation are interpreted to only require the ability to so perform. In the case of product claim, only **the structure** of the claim distinguishes over the prior art. Furthermore, it has been held that a recitation with respect to the manner in which a claimed apparatus is intended to be employed does not differentiate the claimed apparatus from a prior art apparatus satisfying the claimed structural limitations. *Ex parte Masham*, 2 USPQ 2d 1647 (1987).

Regarding claim 60, Baumel does not disclose the at least one plug-in connector includes a single connector having electrical connections for the input power and the output power.

As discussed in claim 50 above, it would have been obvious to one having ordinary skill in the art at the time the invention was made to make the plug-in connector of Baumel as a single connector having electrical connections for the input power and the output power, since this feature is well known in the art.

Regarding claim 66, Baumel discloses a fluid connector 221/222 for routing the cooling medium to and from the converter.

6. Claims 68-70, 76, and 78-79 are rejected under 35 U.S.C. 103(a) as being unpatentable over Baumel in view of Nagafuji (US 5938450).

Regarding claim 68, Baumel discloses every limitation as shown in the above claims including

(a) a converter including a support 21 including a passage 211 for circulation of a cooling medium 23 and a power electronic switching circuit 1 mounted on the support and configured to convert input power to output power having desired electrical characteristics (see claim 48 above);

(b) a housing 61 at least partially surrounding the converter and configured to provide integral EMI shielding and at least partially defining an electrical reference plane for the converter (see claim 58 above);

(c) at least one plug-in connector 52/53/54 coupled to the switching circuit and to the housing; and

(d) inherently a connector plug (not shown, but there must be a connector -a female connector - connected to the connector 52/53/54) adapted to interface with the at least one plug-in connector for establishing electrical continuity between the converter and external circuitry.

However, Baumel fails to disclose the at least one plug-in connector (male connector) and the connector plug (female connector) mate to extend EMI shielding from the housing to the connector plug.

As shown in figures 8A and column 8, lines 27-40, Nagafuji disclose a pair of male and female connector 49/48 each has a metal housing to avoid EMI.

It would have been obvious to one having ordinary skill in the art at the time the invention was made to make the at least one plug-in connector (a male connector) and

the connector plug (a female connector) mate to extend EMI shielding from the housing to the connector plug as taught by Nagafuji in order to avoid EMI, thus providing the at least one plug-in connector and the connector plug mate to extend EMI shielding from the housing to the connector plug.

Examiner remarks: The limitation that adapted to interface with the at least one plug-in connector for establishing electrical continuity between the converter and external circuitry is interpreted to only require the ability to so perform. In the case of product claim, only the structure of the claim distinguishes over the prior art.

Regarding claim 69, The limitation that the housing, the at least one connector and the connector plug are configured to provide contiguous shielding having intrinsically low impedance paths for EMI originating from the switching circuit and from sources external to the converter during operation is interpreted to only require the ability to so perform. In the case of product claim, only the structure of the claim distinguishes over the prior art. Furthermore, it has been held that a recitation with respect to the manner in which a claimed apparatus is intended to be employed does not differentiate the claimed apparatus from a prior art apparatus satisfying the claimed structural limitations. *Ex parte Masham*, 2 USPQ 2d 1647 (1987)

Regarding claim 70, As discussed in claim 50 above, it would have been obvious to one having ordinary skill in the art at the time the invention was made to make the plug-in connector of Baumel as a single connector having electrical connections for the input power and the output power, since this feature is well known in the art.

Regarding claim 76, Baumel discloses a fluid connector 221/222 for routing the cooling medium to and from the converter.

Regarding claim 78, Baumel discloses every limitation as shown in claim 48 above including the at least one plug-in connector comprises a plurality of conductors 52/53/54 coupled to the switching circuit 1, the plurality of conductors including external portions of the conductors that extend outwardly from an external surface of the housing 61.

But, Baumel fails to disclose a peripheral wall extending outwardly from the exterior surface of the housing and at least partially surrounding the plurality of conductors in such a manner that the peripheral wall provides EMI shielding to portions of the plurality of conductors outside of the housing.

Nagafuji, as clearly shown in figures 3A, discloses a peripheral wall (no number, it is a connector shroud) extending outwardly from the exterior surface of a housing (no reference number) and at least partially surrounding the plurality of conductors 4 (contact portions, col.5:31) in such a manner that the peripheral wall provides EMI shielding to portions of the plurality of conductors outside of the housing (col.28-40).

It would have been obvious to one having ordinary skill in the art at the time the invention was made to make a peripheral wall extending outwardly from the exterior surface of the housing 61 and at least partially surrounding the plurality of conductors 52/53/54 in such a manner that the peripheral wall provides EMI shielding to portions of the plurality of conductors outside of the housing as suggested by Nagafuji.

Regarding claim 79, Baumel discloses every limitation as shown in claim 48 above, but fails to disclose the at least one plug-in connector includes a peripheral flange extending from the housing and at least partially surrounding portions of the conductors located outside the housing, and the peripheral flange is configured to provide EMI shielding to the portions of the conductors located outside the housing.

Nagafuji, as clearly shown in figures 3A, discloses a peripheral flange (no number, the outer housing of connector 2) extending outwardly from the exterior surface of a housing (no reference number) and at least partially surrounding the plurality of conductors 4 (contact portions, col.5:31) in such a manner that the peripheral wall provides EMI shielding to portions of the plurality of conductors outside of the housing (col.28-40).

It would have been obvious to one having ordinary skill in the art at the time the invention was made to make a peripheral flange extending outwardly from the exterior surface of the housing 61 and at least partially surrounding the plurality of conductors 52/53/54 in such a manner that the peripheral wall provides EMI shielding to portions of the plurality of conductors outside of the housing as suggested by Nagafuji.

Allowable Subject Matter

7. Claims 51, 61, 71 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

Reasons for allowance

8. The following is an examiner's statement of reasons for allowance: The allowable reason on each of the claims 51, 61, and 71 resides on the limitation that a connection interface coupled to an exterior surface of the housing and including the at least one plug-in connector, wherein the connection interface includes connections for incoming and outgoing cooling fluid. None of the reference art of record discloses or renders obvious such a combination.

Any comments considered necessary by applicant must be submitted no later than the payment of the issue fee and, to avoid processing delays, should preferably accompany the issue fee. Such submissions should be clearly labeled "Comments on Statement of Reasons for Allowance".

Response to Arguments

9. Applicant's arguments filed on 1/10/08 have been fully considered but they are not persuasive. The arguments are mainly as followings:

(a) Remarks, page 10, 2nd paragraph: The argument is about that Baumel does not disclose the at least one plug-in connector and the bars 52/53/54 are just vertical connecting bars or electrical lead.

The argument is not persuasive. The term "connecting bars" is old and well known to imply connector(s). Any electrical lead extending out of a device for connecting to an external device can be considered as a connector, see relevant art of record, US 6442023, figure 3, and reference 41.

(b) Remarks, page 12, last paragraph: The argument is about that Baumel does not disclose the at least one plug-in connector extending EMI shielding from the housing

to a region at least partially surrounding conductors of the at least one plug-in connector.

The argument is not persuasive. Regarding the connector, the Examiner named 52/53/54 as a connector and at the same time as a conductor, because there are no reference number for the connector and the connector simply comprised leads 52/53/54. Regarding the EMI, the connecting bars (the connector) extend from within the housing 61. Thus, the sections of the bars surrounded by the housing are considered as EMI shielding from the housing.

Conclusion

10. **THIS ACTION IS MADE FINAL.** Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the mailing date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to HOA C. NGUYEN whose telephone number is (571)272-8293. The examiner can normally be reached on M-F.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Dean Reichard can be reached on 571-272-1984. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/Dean A. Reichard/
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